

1. Introduction

The City of Greenville's Bicycle Master Plan is intended to serve as the guiding document for development of an integrated network of bicycle facilities and supporting programs, linking neighborhoods and activity centers throughout the City. The network will not only make bicycling a more viable mode of transportation, but will contribute to an enhanced quality of life for residents and visitors.

In development of the City's Comprehensive Plan, *Plan-it Greenville*, as well as many other previous local and regional planning efforts, residents and stakeholders have indicated a strong interest in the development of facilities and programs that support bicycling for recreation and transportation. The recommendations in this Plan will help reach goals adopted in the City's Comprehensive Plan, *Plan It Greenville* (2009), as well Greenville's *Trails and Greenways Master Plan* (2007), GPATS' *2030 Long Range Transportation Plan* (2005), and other plans and policies adopted by the City and regional partners, by creating an environment and programs that support bicycling for transportation and recreation, encourage fewer trips by car, and support active lifestyles.



One purpose of the Bicycle Master Plan is to expand the existing bicycle network in Greenville.

This Plan includes a city-wide evaluation of the existing roadway network of streets to identify opportunities for an interconnected network of bicycle facilities, the development of a bike route system, and a detailed implementation and budget plan. The Plan identifies optimal bicycling routes, preferred treatments, design guidelines and current best practices, and serves as an important reference document that will ensure that bicycle facilities are considered during routine road maintenance, reconstruction, construction, and land development. It also provides recommendations for programs and policies that will support bicycling, which will enable Greenville to be recognized as one of the most bicycle-friendly cities in the country.

This Plan was developed with extensive input from the community and seeks to meet Greenville's vision for a pleasant, enjoyable, and safe place to bicycle. The diligent efforts of the City of Greenville staff, the Bicycle Plan Advisory Committee, and residents interested in improving the bicycle environment in the City have provided the basis for recommendations in this document.

1.1. Vision of the Plan

The vision of this Bicycle Master Plan is to expand the existing bikeway network, complete network gaps, provide greater connectivity while educating and encouraging bicycling. This Plan provides a broad vision, strategies, and actions for the improvement of the bicycling environment in Greenville. It envisions a bicycling environment in the year 2020 that takes a comprehensive approach to the Six Es of a Bicycle Friendly Community – Education, Enforcement, Engineering, Encouragement, Evaluation, and Equity – by establishing the following vision elements:

1. **Engineering:** An inviting network of bicycling facilities for cyclists of all ages and abilities and destinations that support bicycling
2. **Education:** Community understanding and respect for the roles and responsibilities of cyclists
3. **Encouragement:** Increased bicycle ridership and support for a strong bicycle advocacy community and bicycle culture
4. **Enforcement:** A safer environment for cyclists and other transport modes
5. **Evaluation & Planning:** Institutional support and collaboration for bicycling
6. **Equity:** A community that serves a diverse population of bicyclists and provides for the needs of those who ride out of necessity, as well as those who choose to cycle

In Chapter 2, the Plan outlines associated goals and objectives in each of the Six Es to achieve this vision. One of the key objectives is that Greenville will achieve silver-level recognition as a Bicycle Friendly Community (BFC) by 2013.

1.2. Becoming a Bicycle Friendly Community

The City of Greenville, South Carolina is well known for bicycling, in part because of the long history of elite and professional level bicycle racing that has put a spotlight on the city, but also due to a growing number of educational programs, events, and a network of bicycle lanes, greenways, and other facilities that enabled the League of American Bicyclists (LAB) to designate the city as a 'bronze' level Bicycle Friendly Community in October of 2009. In 2008, following a Bicycle Friendly Community Workshop hosted by city staff, the Palmetto Cycling Coalition, and the LAB, a coalition of local bicycle advocates created the informal organization of Bikeville. Its mission is to serve as a volunteer organization to assist the City in its effort to become a designated BFC. Bikeville led the BFC initiative by implementing an action plan based on the League's BFC application. Since receiving a 'bronze' designation in 2009, Bikeville has been active in implementing the feedback provided by the LAB, including the development of this plan. The Bikeville.org website serves as a community resource by providing essential resources to new and existing bicyclists.



Greenville has adopted the name 'Bikeville' because of its efforts in making the City bicycle friendly.

The League of American Bicyclists manages the Bicycle Friendly Community program, which provides incentives, hands-on assistance, and award recognition for communities that actively support bicycling. A BFC welcomes cyclists by providing safe accommodation for cycling and encouraging people to bike for transportation and recreation.¹ A City is designated a Bicycle Friendly Community by showing progress in their five Es: Engineering, Education, Encouragement, Enforcement, and Evaluation/Planning (for purposes of the national Bicycle Friendly Community program, the sixth E, Equity, is incorporated into the other Es).

An integral part of this Plan's effort is a Bicycle Friendly Community Action Plan (see Appendix B), which outlines a strategy for the implementation of the programs

¹ <http://www.bikeleague.org/programs/bicyclefriendlyamerica/communities>

and policies laid out in the Bicycle Master Plan (BMP) while targeting the goal of achieving the Silver, Gold and ultimately Platinum Levels of Bicycle Friendly Community (BFC) recognition, furthering Greenville's reputation as 'Bikeville'.

1.3. Bicycle Master Plan Process

The City of Greenville received a grant from the Greenville Pickens Area Transportation Study (GPATS) in 2010 to develop a Bicycle Master Plan and plan development began in September, 2010. In November, the City hosted a public workshop to solicit insights and priorities from the public. Ninety-one people representing a broad cross-section of the region attended. A second public meeting was held in March, 2011 to present the draft plan recommendations. Over 100 people attended, 60% of whom had not attended the first public meeting.

The City also invited public comment through an online survey. 690 people responded, 60 percent of whom were residents of Greenville. (The remaining 40 percent were residents of the Greenville region.) Survey respondents provided feedback, including on which corridors there should be bicycle improvements, types of programs they would like to see implemented, and which facilities would influence them to ride more.

Those interested in the Bicycle Master Plan also could elect to receive E-newsletters to stay up-to-date on the Plan or visit the Bicycle Master Plan website, which included an interactive map on which they could submit their ideas for improvements.

1.4. Setting and Study Area

The City of Greenville has a population of 58,409 as of the 2010 U.S. Census.² It is the sixth largest city in South Carolina and the largest city in the Greenville-Spartanburg-Anderson Metropolitan Area. The City of Greenville is located in Greenville County, near its center, and is surrounded almost entirely by unincorporated Greenville County. In recent decades, City population has shown modest growth. Population is expected to grow in Greenville by about 11.5 percent per decade, creating a population of about 77,600 in 2030.³



The Swamp Rabbit Trail is the centerpiece of the City's bicycle network.

² US Census, uscensus.gov

³ City of Greenville Comprehensive Master Plan

Figure 1-1 represents Greenville's existing land use map. The majority of Greenville's land area consists of low-density residential uses. Offices and commercial uses are concentrated downtown and along major corridors, such as Laurens Road and Pleasantburg Drive. Parks and mixed-use developments are located throughout the City. The City is home to developing employment and residential areas along the I-85 corridor including the renowned International Center for Automotive Research (ICAR) campus and related businesses.

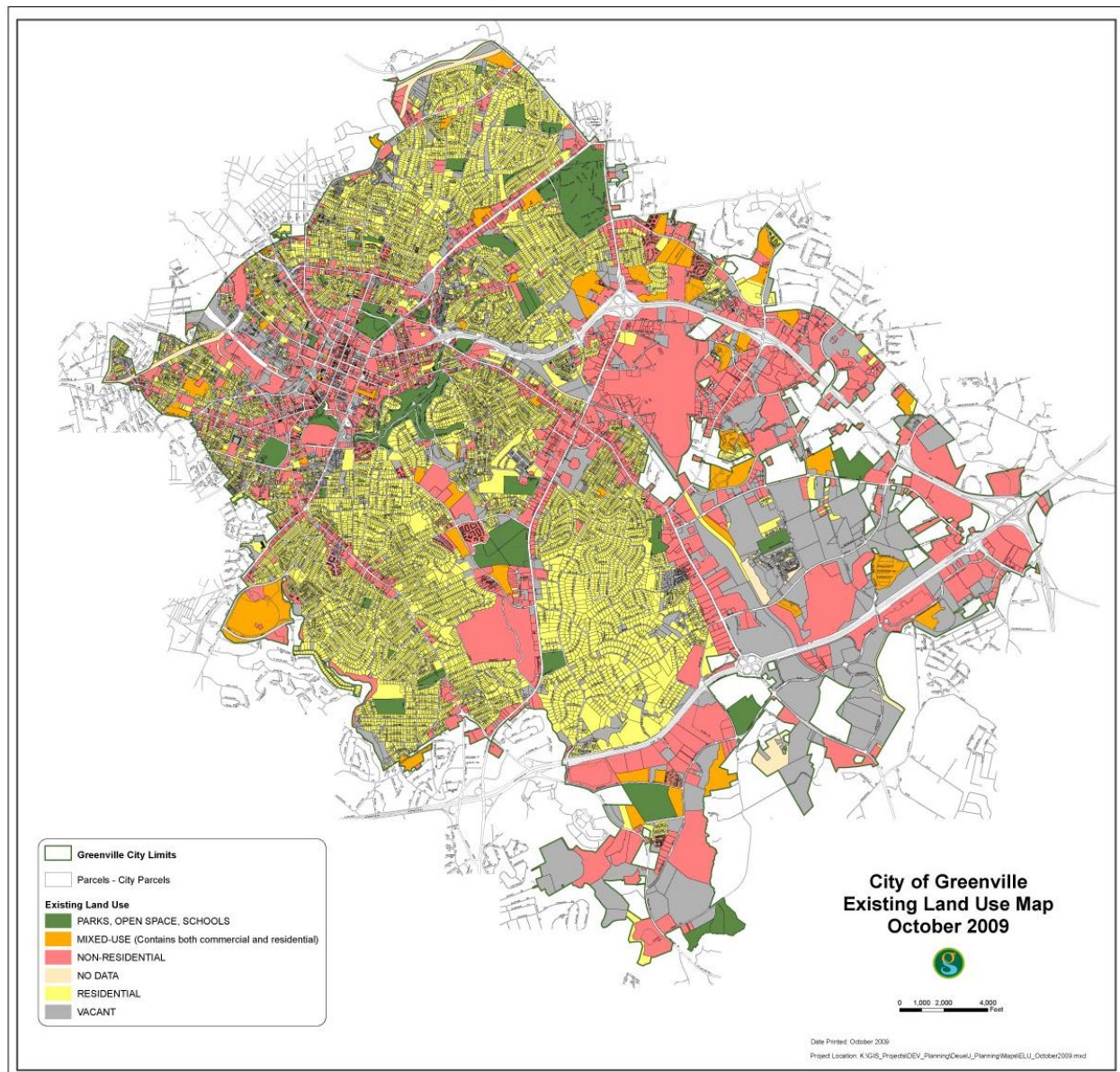


Figure 1-1: Greenville Existing Land Use Map
Source: City of Greenville

Figure 1-2 displays Greenville's future land use map. In the coming years, the City of Greenville intends to increase its proportion of mixed-use and transit-oriented developments, as well as increase its urban residential uses.

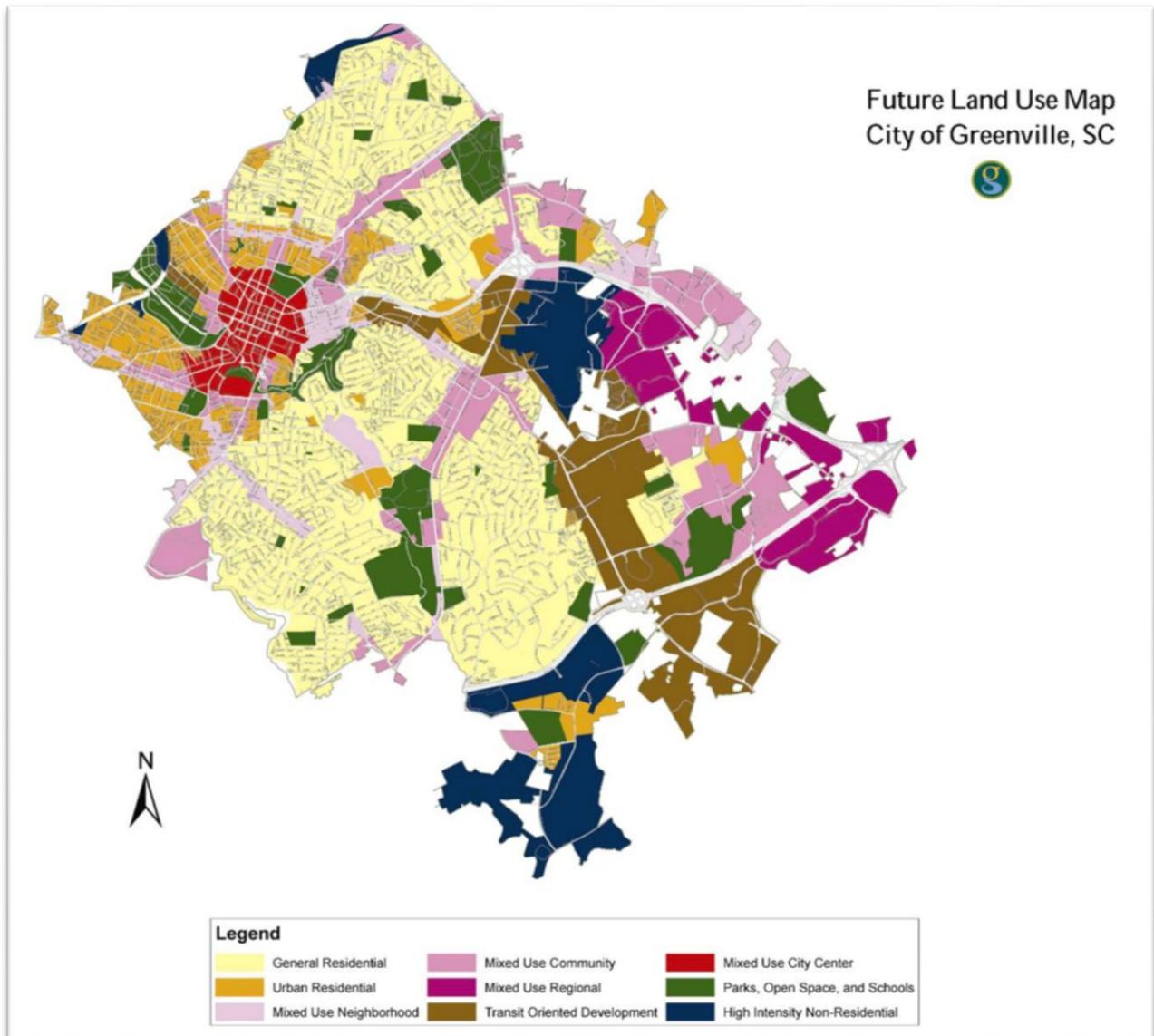


Figure 1-2: Greenville Future Land Use Map
Source: City of Greenville Comprehensive Plan

The City of Greenville is accessible by several highways and both regional and local transit. Interstate Highway 85 runs east-west, connecting Greenville to nearby major cities, including Atlanta, Georgia, and Charlotte, North Carolina. Interstate Highway 385 runs south from the center of Greenville, connecting the City via Interstate Highway 26 to Columbia and Charleston, South Carolina.

Approximately 1 percent of Greenville residents use public transit.⁴ The City operates the county-wide Greenville Transit Authority (GTA) bus service, named Greenlink, which has 12 routes throughout the City. All buses are equipped with bicycle racks and Bikeville created an informational video on how to use the racks on its website (www.bikeville.org).



Greenlink buses are equipped with bicycle racks to expand access and mobility for local cyclists.

1.5. Benefits of Bicycling

Planning to create a more bicycle friendly city contributes to resolving several complex and interrelated issues, including, economic development, traffic congestion, air quality, public health, and livability. By guiding policies and infrastructure investment toward bicycle friendly development, this plan can affect all of these issue areas, which collectively can have a profound influence on the existing and future quality of life in Greenville.

1.5.1. Environmental Benefits

Replacing vehicular trips with bicycle trips has a measurable impact on reducing human-generated greenhouse gases (GHGs) in the atmosphere that contribute to climate change. Fewer vehicle trips and vehicle miles traveled (VMT) translates into fewer mobile source pollutants, such as carbon dioxide, nitrogen oxides and hydrocarbons, being released into the air. Providing transportation options that reduce VMT is an important component of decreasing greenhouse gas emissions and improving air quality. Chapter 4 outlines the estimated air quality impacts of improved bicycling in Greenville.



Cities that support bicycling experience many benefits, including economic, safety, and air quality benefits.

1.5.2. Public Health Benefits

Public health professionals have become increasingly aware that the impacts of automobiles on public health extend far beyond asthma and other respiratory conditions caused by air pollution. There is a much deeper understanding of the connection between the lack of physical activity resulting from auto-oriented community designs and various health-related problems, such as obesity and other chronic diseases. Although diet and genetic predisposition contribute to these conditions, physical inactivity is now widely understood

⁴American Community Survey, United States Census, 2006-2008.

to play a significant role in the most common chronic diseases in the U.S., including heart disease, stroke, and diabetes.

According to the LiveWell Greenville Community Action Plan, about 40% of Greenville County adults fall well below recommended levels of physical activity, and 15% are completely inactive. As a result, approximately 65% of adults and more than 40% of children in Greenville County are overweight or obese. Numerous chronic diseases are correlated to lack of physical activity and obesity. In Greenville, rates of diabetes, heart disease and asthma are rising.⁵ Creating bicycle-friendly communities is one of several effective ways to encourage active lifestyles, ideally resulting in a higher proportion of Greenville's residents achieving recommended activity levels.

1.5.3. Economic Benefits

Bicycling is economically advantageous to individuals and communities. Cost savings associated with bicycle travel expenses are accompanied by potential savings in health care costs. On a community scale, bicycle infrastructure projects are generally far less expensive than automobile-related infrastructure. Further, shifting a greater share of daily trips to bike trips reduces the impact on the region's transportation system, thus reducing the need for improvements and expansion projects. Studies have also shown that the overall contribution of bicycling to the economy is significant. A 2006 study conducted by the Wisconsin Department of Transportation and the Bicycle Federation of Wisconsin estimates that the bicycle-related sector contributes \$556 million to the Wisconsin economy annually⁶. This estimate does not include the economic benefits derived from bicycle tourism, which is reported to constitute a significant portion of the state's \$11.7 billion in the tourism sector. The 2008 value of the bicycle-related economy in Portland, Oregon – the first major city to achieve Platinum BFC status – was estimated to be \$90 million, representing a 38 percent increase over 2006.⁷

1.5.4. Community/Quality of Life Benefits

Fostering conditions where bicycling is accepted and encouraged increases a city's livability from a number of different perspectives, that are often difficult to measure but nevertheless important. The design, land use patterns, and transportation systems that comprise the built environment have a profound impact on quality of life issues. Studies have found that people living in communities with built environments that promote bicycling and walking tend to be more socially active, civically engaged, and are more likely to know their neighbors.^{8,9} Settings where walking and riding bicycles are viable also offer greater independence to the elderly, the disabled, and people of limited economic means who are unable to drive automobiles for physical or economic reasons. The aesthetic quality of a community also improves when visual and noise pollution caused by automobiles is reduced and when green space is reserved for facilities that enable people of all ages to recreate and commute in pleasant settings.

⁵ LiveWell Greenville. (2010). www.livewellgreenville.org and the LiveWell Greenville *Community Action Plan*.

⁶ "The Economic Impact of Bicycling in Wisconsin." Bicycle Federation of Wisconsin and WI DOT, 2006. <http://www.dot.wisconsin.gov/business/econdev/docs/impact-bicycling.pdf>

⁷ "The Value of the Bicycle-Related Industry in Portland." Alta Planning + Design. 2008.

⁸ Frumkin, H. 2002. *Urban Sprawl and Public Health*. Public Health Reports 117: 201–17.

⁹ Leyden, K. 2003. "Social Capital and the Built Environment: The Importance of Walkable Neighborhoods." *American Journal of Public Health* 93: 1546–51.

1.5.5. Safety Benefits

Conflicts between bicyclists and motorists result from poor riding and/or driving behavior as well as insufficient or ineffective facility design. Encouraging development and redevelopment in which bicycle travel is fostered improves the overall safety of the roadway environment for all users. Well-designed bicycle facilities improve safety and security for current cyclists and also encourage more people to bike, which in turn, can further improve bicycling safety. Studies have shown that the frequency of bicycle collisions has an inverse relationship to bicycling rates – more people on bicycles equates to fewer crashes.¹⁰ Providing information and educational opportunities about safe and lawful interactions between bicyclists and other roadway users also improves safety.

1.6. Overview of the Plan

The Greenville Bicycle Master Plan contains the following chapters:

- *Chapter 1 – Introduction:* Sets the context for the Plan, including purpose and structure.
- *Chapter 2 – Vision, Goals, Objectives, and Policies:* Summarizes the vision, goals, objectives, and policies guiding the implementation of the Plan.
- *Chapter 3 – Existing Conditions:* Provides a description of the existing bicycle conditions in the City of Greenville. The chapter includes a map of existing bikeways and descriptions of existing bicycle programs.
- *Chapter 4 – Needs Analysis:* this chapter reviews the relationship between bicycle activity, commute patterns, demographics, land use, and collisions. This chapter also includes a review of community input.
- *Chapter 5 – Recommendations:* Includes recommended network, signage and pavement marking, spot improvements, and program and policy recommendations.
- *Chapter 6 – Design Guidelines:* Establishes standards and best practices for implementation of bikeway facilities and other infrastructure improvements.
- *Chapter 7 – Implementation:* Outlines an implementation strategy, including cost estimates for proposed projects.

¹⁰ Jacobsen, P. “Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling”. *Injury Prevention*, 9: 205-209. 2003.